

EXCERPT FROM CONFERENCE REPORT ON FY 98 DOD APPROPRIATION BILL
23 SEP 97

The conferees agree to provide \$2,100,690,000 (note: \$60M above the budget) for ship depot maintenance, and delete the language recommended by the Senate establishing a floor on ship depot maintenance funding. The conferees' recommendation will provide the fleet commanders flexibility in managing their operation and maintenance funds during the fiscal year, in recognition that emergencies can lead to funding shortfalls. However, the conferees strongly urge the Navy leadership to ensure that all funds provided for ship maintenance are used solely for that purpose except in the most unusual of circumstances.

The conferees understand that the Navy will initiate a pilot program beginning on October 1, 1997 to study whether combining fleet intermediate facilities with Navy shipyards might yield economies of scale and allow maintenance managers to better balance workloads in the Navy shipyards. The conferees believe it will take at least two years before the Navy can determine whether this new arrangement is in fact cost effective and should be made permanent or expanded to other locations. Therefore, the conferees direct that the pilot program shall not be expanded until six months after the Navy reports to the Committees on Appropriations on its findings, and that such report shall be made on or after April 1, 1999. Further, the conferees direct that the Navy shall not make any changes to the workforce in terms of total numbers of employees and shall not change the name of the Navy activity involved or make any permanent changes until this pilot study has been completed and evaluated by the Congress. The conferees are hopeful that the study will lead to significant improvements in Navy maintenance functions and look forward to approving permanent changes throughout the Navy beginning in fiscal year 2000.

CONGRESSIONAL RECORD, 25 SEP 97, PAGE H7847
EXCERPT FROM HOUSE FLOOR DEBATE REGARDING
CONFERENCE REPORT ON FY 98 DOD APPROPRIATION BILL

Mr. SISISKY. Madam Speaker, I would like to engage the gentleman from Florida [Mr. Young], chairman of the committee, in a matter that is of concern to me.

I understand there is report language in this bill which requires the Navy to report back to the Congress on the impact pilot program now being conducted at Pearl Harbor Naval Shipyard. I would simply ask the chairman to clarify the intent of this language. Is the language in fact directed solely at Pearl Harbor Naval Shipyard?

Mr. YOUNG of Florida. Madam Speaker, reclaiming my time, I would respond to the question of the gentleman from Virginia [Mr. Sisisky] by saying yes and say to him that this language addresses only the notion of combining a Fleet Intermediate Maintenance Facility with a naval shipyard at Pearl Harbor Naval Shipyard. This language is not intended to, in any way, impact ongoing regional maintenance activities at any other shipyard.



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

18 May 2001

The Honorable Bob Stump
Chairman, Committee on
Armed Services
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Fiscal Year 1998 Defense Appropriations Conference Report 105-265 directed the Navy to report on or after April 1, 1999, its findings of the pilot program to study whether combining fleet intermediate ship maintenance facilities with Naval Shipyards might result in the more efficient and effective accomplishment of ship maintenance. The Navy's pilot program findings are enclosed.

Operation of the pilot through both Fiscal Year 1999 and Fiscal Year 2000 has generated positive results and valuable lessons learned. Increased efficiency and effectiveness derived from organizational consolidation has been demonstrated. In addition to decreasing the cost of delivering a maintenance man-day to the fleet in Pearl Harbor, reductions in the physical footprint required to deliver that maintenance were achieved. This better utilization of maintenance resources contributes to getting more maintenance performed, thus improving fleet readiness.

Although the Pearl Harbor Pilot Test Plan designated Fiscal Year 1997 as the baseline year and Fiscal Year 1999 as the test comparison year, the primary metrics are continuing to be used as assessment tools and are also enclosed as an Addendum to the Pearl Harbor Regional Maintenance Pilot Report to Congress.

In the interest of gaining these maintenance advantages Navy-wide, we will incorporate the lessons learned as we consolidate ship maintenance activities in other regions. A similar letter has been sent to Chairmen Warner, Stevens and Lewis. As always, if I can be of further assistance, please let me know.

Sincerely,

A handwritten signature in black ink, reading "R. B. Pirie, Jr.", is written over the word "Sincerely,".

Robert B. Pirie, Jr.
Secretary of the Navy
Acting

Enclosures

Copy to:
The Honorable Ike Skelton
Ranking Minority Member



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

18 May 2001

The Honorable John Warner
Chairman, Committee on
Armed Services
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Fiscal Year 1998 Defense Appropriations Conference Report 105-265 directed the Navy to report on or after April 1, 1999, its findings of the pilot program to study whether combining fleet intermediate ship maintenance facilities with Naval Shipyards might result in the more efficient and effective accomplishment of ship maintenance. The Navy's pilot program findings are enclosed.

Operation of the pilot through both Fiscal Year 1999 and Fiscal Year 2000 has generated positive results and valuable lessons learned. Increased efficiency and effectiveness derived from organizational consolidation has been demonstrated. In addition to decreasing the cost of delivering a maintenance man-day to the fleet in Pearl Harbor, reductions in the physical footprint required to deliver that maintenance were achieved. This better utilization of maintenance resources contributes to getting more maintenance performed, thus improving fleet readiness.

Although the Pearl Harbor Pilot Test Plan designated Fiscal Year 1997 as the baseline year and Fiscal Year 1999 as the test comparison year, the primary metrics are continuing to be used as assessment tools and are also enclosed as an Addendum to the Pearl Harbor Regional Maintenance Pilot Report to Congress.

In the interest of gaining these maintenance advantages Navy-wide, we will incorporate the lessons learned as we consolidate ship maintenance activities in other regions. A similar letter has been sent to Chairmen Stump, Stevens and Lewis. As always, if I can be of further assistance, please let me know.

Sincerely,

A handwritten signature in dark ink, reading "R. B. Pirie, Jr.", is positioned above the typed name.

Robert B. Pirie, Jr.
Secretary of the Navy
Acting

Enclosures

Copy to:
The Honorable Carl Levin
Ranking Minority Member



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

18 May 2001

The Honorable Jerry Lewis
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Fiscal Year 1998 Defense Appropriations Conference Report 105-265 directed the Navy to report on or after April 1, 1999, its findings of the pilot program to study whether combining fleet intermediate ship maintenance facilities with Naval Shipyards might result in the more efficient and effective accomplishment of ship maintenance. The Navy's pilot program findings are enclosed.

Operation of the pilot through both Fiscal Year 1999 and Fiscal Year 2000 has generated positive results and valuable lessons learned. Increased efficiency and effectiveness derived from organizational consolidation has been demonstrated. In addition to decreasing the cost of delivering a maintenance man-day to the fleet in Pearl Harbor, reductions in the physical footprint required to deliver that maintenance were achieved. This better utilization of maintenance resources contributes to getting more maintenance performed, thus improving fleet readiness.

Although the Pearl Harbor Pilot Test Plan designated Fiscal Year 1997 as the baseline year and Fiscal Year 1999 as the test comparison year, the primary metrics are continuing to be used as assessment tools and are also enclosed as an Addendum to the Pearl Harbor Regional Maintenance Pilot Report to Congress.

In the interest of gaining these maintenance advantages Navy-wide, we will incorporate the lessons learned as we consolidate ship maintenance activities in other regions. A similar letter has been sent to Chairmen Warner, Stump and Stevens. As always, if I can be of further assistance, please let me know.

Sincerely,

A handwritten signature in dark ink, appearing to read "R. Pirie", is written over the typed name.

Robert B. Pirie, Jr.
Secretary of the Navy
Acting

Enclosures

Copy to:
The Honorable John P. Murtha
Ranking Minority Member



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
1000 NAVY PENTAGON
WASHINGTON, D.C. 20350-1000

18 May 2001

The Honorable Ted Stevens
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

The Fiscal Year 1998 Defense Appropriations Conference Report 105-265 directed the Navy to report on or after April 1, 1999, its findings of the pilot program to study whether combining fleet intermediate ship maintenance facilities with Naval Shipyards might result in the more efficient and effective accomplishment of ship maintenance. The Navy's pilot program findings are enclosed.

Operation of the pilot through both Fiscal Year 1999 and Fiscal Year 2000 has generated positive results and valuable lessons learned. Increased efficiency and effectiveness derived from organizational consolidation has been demonstrated. In addition to decreasing the cost of delivering a maintenance man-day to the fleet in Pearl Harbor, reductions in the physical footprint required to deliver that maintenance were achieved. This better utilization of maintenance resources contributes to getting more maintenance performed, thus improving fleet readiness.

Although the Pearl Harbor Pilot Test Plan designated Fiscal Year 1997 as the baseline year and Fiscal Year 1999 as the test comparison year, the primary metrics are continuing to be used as assessment tools and are also enclosed as an Addendum to the Pearl Harbor Regional Maintenance Pilot Report to Congress.

In the interest of gaining these maintenance advantages Navy-wide, we will incorporate the lessons learned as we consolidate ship maintenance activities in other regions. A similar letter has been sent to Chairmen Warner, Stump and Lewis. As always, if I can be of further assistance, please let me know.

Sincerely,

A handwritten signature in dark ink, appearing to read "R. B. Pirie, Jr.", is located below the "Sincerely," text.

Robert B. Pirie, Jr.
Secretary of the Navy
Acting

Enclosures

Copy to:
The Honorable Daniel K. Inouye
Ranking Minority Member

REPORT TO CONGRESS
PEARL HARBOR REGIONAL MAINTENANCE PILOT

Prepared by:

Department of the Navy
Commander in Chief, United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

May 2001

TABLE OF CONTENTS

<i>Subject</i>	<i>Page</i>
1. EXECUTIVE SUMMARY.....	1
2. BACKGROUND	
2.1 REGIONAL MAINTENANCE.....	3
2.2 PEARL HARBOR SHIP MAINTENANCE ACTIVITIES.....	4
2.3 PEARL HARBOR PILOT CONCEPT.....	5
3. PEARL HARBOR PILOT OPERATIONAL PRINCIPLES AND STRUCTURE	
3.1 CONCEPT OF OPERATIONS.....	5
3.2 CLAIMANCY.....	5
3.3 ACCOUNTING (FINANCIAL) SYSTEM.....	6
3.4 PILOT ORGANIZATIONAL STRUCTURE.....	6
4. CONGRESSIONAL INTEREST	6
5. PEARL HARBOR PILOT TEST PLAN	
5.1 TEST PLAN FORMULATION	6
5.2 PILOT ASSESSMENT METRICS.....	7
5.3 NAVY AUDIT SERVICE VERIFICATION.....	8
5.4 DEPARTMENT OF DEFENSE INSPECTOR GENERAL REVIEW.....	8
5.5 GENERAL ACCOUNTING OFFICE EVALUATION.....	8
6. PILOT IMPLEMENTATION STATUS	
6.1 SINGLE MAINTENANCE ACTIVITY	8
6.2 MOST EFFICIENT ORGANIZATION BILLET ASSIGNMENT PROCESS.....	9
6.3 FACILITY CONSOLIDATION.....	9
6.4 FINANCIAL SYSTEM	9
6.5 LOCAL BOARD OF DIRECTORS.....	9
6.6 PILOT BOARD OF DIRECTORS.....	10
6.7 WORKFORCE AND OPERATIONAL STABILITY.....	10
7. PEARL HARBOR PILOT ASSESSMENT	
7.1 ASSESSMENT METHODOLOGY.....	10
7.2 PEARL HARBOR PILOT TEST PLAN RESULTS	10
7.3 PEARL HARBOR PILOT POSITIVE OUTCOMES.....	11
7.4 AREAS NEEDING IMPROVEMENT.....	13
8. PEARL HARBOR PILOT LESSONS LEARNED	
8.1 OVERVIEW.....	13
8.2 LESSONS LEARNED	14
9. CONCLUSION.....	15

APPENDIX A: GAO REPORT RECOMMENDATIONS

APPENDIX B: DETAILED DISCUSSION OF PEARL HARBOR PILOT TEST PLAN METRICS

1. Executive Summary

This report is submitted as directed by the Fiscal Year 1998 Defense Appropriations Conference Report 105-265.

The Navy is in the process of regionalizing maintenance. The goal of this effort is to create workforce flexibility to respond to the warfighter, reduce maintenance infrastructure through sharing or consolidating facilities, size organic facilities to core, integrate maintenance and supply and train Sailors ashore to fill critical afloat maintenance billets in the Battle Group.

The specialization, duplication and overlap existing in the different maintenance activities in a region limit the flexibility to best use the total maintenance resources available. A key element of the Regional Maintenance Plan is the consolidation of separate ship maintenance facilities in a region to eliminate these limitations.

In 1997, the Chief of Naval Operations made the decision to establish a pilot program in Pearl Harbor to demonstrate the concept. The maintenance activities involved were Pearl Harbor Naval Shipyard and Naval Intermediate Maintenance Facility, Pearl Harbor. A Concept of Operations was developed that designated the Commander, U. S. Pacific Fleet (CINCPACFLT) as the major claimant and Commander, Naval Sea Systems Command (COMNAVSEA) as the operating agent and technical authority. The purpose of the pilot was to demonstrate that a single maintenance activity could successfully support the full spectrum of work (both Intermediate and Depot level) with a combined civilian/military workforce and maintain customer responsiveness and Fleet readiness.

A Pearl Harbor Pilot Test Plan was developed by a joint Navy and Office of the Secretary of Defense (OSD) team. The Test Plan quantitatively measures if a combined Naval Shipyard/Intermediate Maintenance Facility, using a mixed civilian and military workforce, results in increased manpower utilization and lower overall unit costs for maintenance than separate Naval Shipyard and Intermediate Maintenance facilities. The Test Plan consists of nine assessment metrics. Performance expectations for the first six metrics were specified. Fiscal Year 1997 was designated as the baseline year for comparison purposes, as this was the last full year of separate operation for the two activities.

After comprehensive and detailed implementation preparation, the two activities were merged on April 30, 1998, and became the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY&IMF). On October 1, 1998, the transition was made to Resource Management System funding, and full Pilot operation commenced.

The Pearl Harbor Pilot Test Plan metrics clearly and objectively substantiate that the quantitative pilot expectations have been successfully achieved.

For Fiscal Year 1999, the cost metric showed improvement over the baseline year (\$5.52 /manhour), and successfully met the performance expectation. If the dollars per manhour improvement are applied to the production work accomplished during Fiscal Year 1999 (2,286,184 manhours), the result is a savings of \$12.6M for the fiscal year. The performance efficiency metric also met expectation. The maintenance actions completed and ship material readiness (maintenance item backlog) metrics were inconclusive. The customer satisfaction metric met expectations. The schedule integrity metric indicated improvement. The remaining three metrics indicated that performance was maintained at a high level, without measurable

degradation. Naval Audit Service has verified the cost metric and performance efficiency metric results.

The Test Plan metric summary is displayed below.

Metric Nr.	TITLE	FY97 (Baseline Year)	Performance Expectations	FY99 (Test Year)	EVALUATION
1	Cost Per Unit Output Ensuring Total Cost Visibility (\$/production man-hour)	\$144.51	\$137.28-\$140.17	\$138.99	Met Expectation
2	Production Efficiency and Resource Utilization	3.15	2.99-3.06	3.03	Met Expectation
3	Maintenance Actions Completed	19,777	19,777	11,501	Inconclusive (see Appendix B)
4	Material Readiness of the Pearl Harbor Based Ships (Number of Open Maintenance Actions)	17,733	15,960	15,791	Inconclusive (see Appendix B)
5	Customer Satisfaction (Schedule Adherence)	11.4% (Late)	Better than 11.4%	8.6% (Late)	Met Expectation
6	Quality	0.76%	No Degradation	1.08%	Maintained Quality (See Appendix B)
7	Schedule Integrity	1.23	Decrease is improvement.	1.16	Improvement
8	New Casualty Reports (CASREPs)	2	Decrease is improvement.	4	Maintained Quality Note 1
9	Earned Value	Statistical Method – No One Number	Results of analysis	Statistical Method – No One Number	No Degradation in Earned Value Note 2

Note 1: Very small number of CASREPs indicates quality of work remains excellent. See Appendix B.

Note 2: The differences are so small that they are statistically insignificant. Earned value remains unchanged.

Further, the goals and objectives for demonstrating the Navy's Regional Maintenance Plan were achieved. The pilot consolidation of all maintenance resources has provided the structure and organization to perform Fleet priority work in homeport while retaining the smallest possible total workforce. Despite being overloaded due to a shortfall in military manning PHNSY&IMF performance has met or exceeded expectations. Workforce flexibility has exceeded expectations as demonstrated by the ability of the activity to respond to changing warfighter maintenance requirements and priorities. The maintenance infrastructure has been reduced, and customer satisfaction has improved.

As the magnitude and breadth of change inherent in the pilot were significant, various problems and challenges were experienced. None were debilitating. Maintenance execution continued without disruption, unit costs decreased and the amount of maintenance performed increased. Many lessons learned were generated and documented.

The Pearl Harbor Pilot is demonstrating this single activity is successfully accomplishing ship maintenance while maintaining customer responsiveness and Fleet readiness. The concept is considered to be a viable and effective element of the Navy's Regional Maintenance Plan.

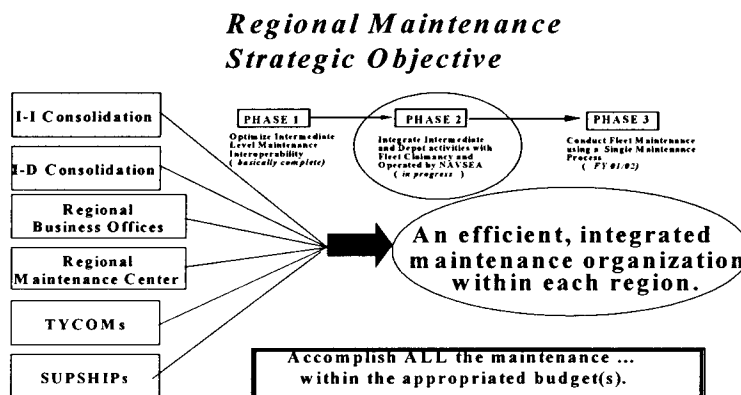
2. Background

2.1 Regional Maintenance

In March 1994, the Chief of Naval Operations announced a Regional Maintenance Plan to streamline the Navy ship maintenance process, reduce maintenance infrastructure, maximize productive maintenance output and reduce maintenance costs. The endstate of the Regional Maintenance Plan is to conduct Fleet maintenance using a single maintenance process. The Regional Maintenance Plan consists of three phases: 1) optimize interoperability of platform specific Intermediate level maintenance activities, 2) integrate Intermediate and Depot activities, and 3) conduct Fleet maintenance using a single maintenance process.

The existing ship maintenance organizational structure in each region where Navy ships are homeported had evolved in the past to accommodate a much larger force level of ships than now exists. With the reduction in ship population, the maintenance activity staffing became smaller, but the facilities and organizational framework basically remained the same. The specialization, duplication and overlap existing in the different maintenance activities in a region limited the flexibility to best use the total maintenance resources available. A key element of the Regional Maintenance Plan is the consolidation of separate ship maintenance facilities in a region to eliminate these limitations. The specific goals and objectives of the Regional Maintenance Plan are as follows:

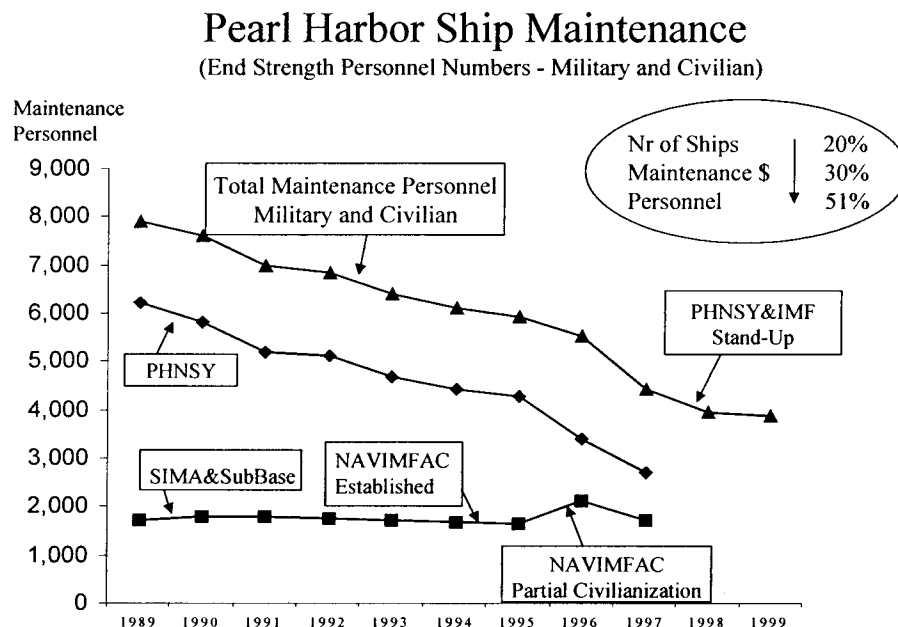
- Emphasize process improvement while maintaining customer responsiveness and Fleet readiness.
- Eliminate excess infrastructure capacity and capability.
- Better integrate supply support and maintenance requirements.
- Provide management visibility of all maintenance related costs.
- Provide compatible ADP management across all levels of maintenance.
- Preserve the requirement for System Command positive technical control over maintenance requirements and work processes.
- Reflect DoD and Navy core competencies policy.



The preceding diagram illustrates the Regional Maintenance Plan and the three phases. Phase 1 is basically complete, Phase 2 is in progress, and Phase 3 is targeted to commence in Fiscal Year 2001. The Pearl Harbor Pilot was developed to demonstrate a concept of operations for consolidating I-level and D-level ship maintenance activities (Phase 2) to insure that the Regional Maintenance Plan goals and objective would be achieved.

2.2 Pearl Harbor Ship Maintenance Activities

Navy ship maintenance in Pearl Harbor was being accomplished by two separate maintenance activities – the Pearl Harbor Naval Shipyard (PHNSY) and the Naval Intermediate Maintenance Facility, Pearl Harbor (NAVIMFAC). Each was an individual command, with its own physical plant, organizational infrastructure and administrative support. PHNSY was a Depot (D) level maintenance activity which was highly facilitized and whose primary work was relatively lengthy and complex ship availabilities. NAVIMFAC was an Intermediate (I) level maintenance activity with less capability (e.g. no graving drydocks), and their workload consisted of shorter, less complex, but time-critical ship maintenance. In Fiscal Year 1997, there were 2,680 civilians and 44 military assigned to PHNSY, and 601 civilians and 1,116 military in NAVIMFAC. The two activities had different maintenance processes and funding systems due to the nature of their work, making sharing of resources and infrastructure difficult. PHNSY was owned and operated by the Naval Sea Systems Command (NAVSEA) and funded under the Navy working Capital Fund (NWCF). NAVIMFAC was owned and operated by the U. S. Pacific Fleet (PACFLT) and was Resource Management System funded (a yearly authorization commonly referred to as “mission funding”). The total number of maintenance personnel has been significantly reduced over the last ten years, to match workforce to workload as illustrated in the following chart of civilian and military resources in the Pearl Harbor region.



Due to the small size, the PHNSY had limited flexibility in meeting peak workload demands. Further, it was hard to maintain the right number and mix of skilled workers required at both activities to meet the workload requirements. While the workload compositions and processes of the two activities were different, many of the individual work items performed by them were essentially the same, and they both worked on the ships home-ported at Pearl Harbor. Finally, PHNSY and NAVIMFAC were in close geographic proximity, and PHNSY was already performing all of the nuclear work (I-level and D-level) in the region. All of these factors led the Navy to choose Pearl Harbor as the region to pilot Phase 2 of the Regional Maintenance Plan.

2.3 Pearl Harbor Pilot Concept

In the Spring of 1997 CINCPACFLT and COMNAVSEA agreed on a concept of operations to merge PHNSY and NAVIMFAC into a single maintenance activity with an integrated military and civilian workforce to pilot Phase 2 of Navy's Regional Maintenance Plan. CNO approved pilot implementation on August 6, 1997.

On 26 November 1997, CINCPACFLT and COMNAVSEA signed a formal Memorandum of Agreement (MOA) to codify the concept of operations for the pilot and define the roles and responsibilities of each parent organization. CINCPACFLT was designated as the major claimant for the combined activity, and COMNAVSEA was designated as the operating agent and technical authority. In addition to ownership responsibilities, the major claimant is also responsible for budget formulation and securing of funding. The MOA also defined expectations and a transition strategy to achieve common maintenance processes and a single financial system for the combined activity.

Subsequently, a Pearl Harbor Pilot Test Plan was developed by a joint Navy and OSD team. The Test Plan quantitatively measures if a combined Naval Shipyard/Intermediate Maintenance Facility, using a mixed civilian and military workforce, results in increased manpower utilization and lower overall unit costs for maintenance than separate Naval Shipyard and Intermediate Maintenance facilities.

3. Pearl Harbor Pilot Operational Principles and Structure

3.1 Concept of Operations

The Concept of Operations developed for the Pearl Harbor Pilot defined the following guiding principles:

- Most Cost Effective Utilization of all Resources
- One Command
- Integrated Workforce
- Standard Set of Work Documents
- Standard Quality Assurance Program
- Integrated Automated Information Systems (AIS)
- Operationally Responsive Organization
- One Customer Interfacing Process (to screen, prioritize, and track maintenance)

3.2 Claimancy

As discussed above, CINCPACFLT was claimant for the NAVIMFAC and COMNAVSEA for PHNSY. To best facilitate achieving the operational principles and structure for the new activity, CINCPACFLT was designated the major claimant of the combined activity, and COMNAVSEA was designated as the operating agent and technical authority.

3.3 Accounting (Financial) System

The accounting (financial) system used by PHNSY was the Navy Working Capital Fund (NWCF) while NAVIMFAC was funded by Resource Management System funding. A major guiding principle of the pilot was the ability to gain increased flexibility through free-flow of the integrated military and civilian workforce to all required work, without restrictions imposed by accounting system regulatory requirements. A team of Navy financial experts, led by a Navy Flag Officer, reviewed all accounting system options and concluded that Resource Management System funding provided the most flexibility for the pilot. Three other separate panels of Navy financial experts reached the same conclusion (Maintenance Support Quality Management Board Financial Working Group in 1995, CNO NWCF Study Group in 1998, and Fleet/COMNAVSEA Financial Review Group in 1999). Since Resource Management System accounting systems do not mandate a high level of cost accounting and visibility for discrete work items, provisions were developed to maintain total and detailed cost visibility. A detailed discussion is contained in Appendix A.

A Navy decision was made to use the Resource Management System accounting system for the new maintenance activity, beginning in Fiscal Year 1999.

3.4 Pilot Organizational Structure

A Pilot Study Report was approved by CINCPACFLT and COMNAVSEA. An organizational structure, military and civilian manning considerations, physical plant consolidations and modification, supervisory targets and other operational elements were identified. Skills balancing, work priorities and integration of military personnel were major considerations. Implementation and transition processes were also identified, including establishment of a dedicated Transition Team. The report also addressed identifying manpower requirements for the consolidated command.

4. Congressional Interest

The Fiscal Year 1998 Defense Appropriations Conference Report 105-265, recognized that the Navy planned to initiate a pilot to study whether combining fleet intermediate maintenance facilities with Navy shipyards might yield economies of scale and allow maintenance managers to better balance workloads. The conferees directed that the Navy submit a report to Congress assessing pilot performance on or after April 1, 1999.

5. Pearl Harbor Pilot Test Plan

5.1 Test Plan Formulation

The Deputy Secretary of Defense required establishment of metrics for the Pearl Harbor Pilot and approval by Under Secretary of Defense [Comptroller] (USD(C)) prior to beginning in Fiscal Year 1999. The test plan was to evaluate if a combined Naval Shipyard/Intermediate Maintenance Facility, using a mixed civilian and military workforce, would result in increased manpower utilization and lower overall unit costs for maintenance than a separate Naval Shipyard and Intermediate Maintenance Facility in the same region. Accordingly, a joint Navy and OSD team developed the initial Pearl Harbor Pilot Test Plan to quantitatively evaluate the pilot.

5.2 Pilot Assessment Metrics

The Pearl Harbor Pilot Test Plan consists of nine metrics, each designed to assess performance in the important aspects of ship maintenance, and, together as a whole, evaluate overall effectiveness of the pilot.

Fiscal Year 1997 was selected as the baseline year as this was the last full year PHNSY and NAVIMFAC operated as independent activities. Data was collected for the baseline year Fiscal Year 1997, and the calculated metric results compared with Fiscal Year 1999. Fiscal Year 1998 was a transition year in that the activities were merged at mid-year. Accordingly, Fiscal Year 1998 was not used for evaluation of the effectiveness of the pilot.

The nine metrics are as follows:

Metric 1: Cost per Unit Output

- Total cost of a Production Shop Direct Manhour of work delivered. Objective is to provide total cost visibility of a Production Shop Direct Manhour.

Metric 2: Production Efficiency and Resource Utilization

- Total activity labor hours expended to deliver a Production Shop Direct labor hour. Objective is to assess effectiveness of personnel resource distribution and utilization.

Metric 3: Maintenance Actions Completed

- Total Current Ship's Maintenance Project (CSMP) work item throughput. Objective is to determine the total CSMP work items completed.

Metric 4: Material Readiness of the Pearl Harbor Based Ships

- Total CSMP work item backlog. Objective is to monitor change in the material readiness of Pearl Harbor based Surface ships and Submarines.

Metric 5: Customer Satisfaction

- Availability Schedule Adherence. Objective is to measure degree of adherence to CNO scheduled availability dates.

Metric 6: Quality

- Activity Depot Work Quality. Objective is to determine an activity depot work quality index by analysis of rework (work performed after the completion to correct work deficiencies) and the total size of the depot work completed.

Metric 7: Schedule Integrity.

- Objective is to determine an activity work schedule integrity index by analysis of the budgeted allowance of work scheduled and actual amount of work performed.

Metric 8: New Casualty Reports (CASREPS).

- CASREPS attributed to activity work during availabilities. Objective is to determine post availability equipment failures resulting from activity work performed during an availability.

Metric 9: Earned Value.

- Analysis of selected similar work items using a statistical technique. Six to eight percent of the activity workload would be included.

Each of the metrics measures different aspects of the pilot operation, thus all of the metrics must be considered together as a whole to evaluate overall effectiveness of the pilot. Metric 1 measures the total cost of production work performed. Metrics 1, 2 and 8 take into consideration data for all Intermediate as well as Depot level work and/or workers. These first two metrics are considered key assessment metrics and weigh heavily when evaluating the pilot. Metrics 3 and 4 are geared towards measuring aspects of Intermediate level work and metrics 5, 6, 7 and 9 are geared towards measuring effectiveness in completing Depot level work. Expected performance targets were specified for metrics 1 through 6.

5.3 Naval Audit Service (NAS) Verification

During the planning period for the Pearl Harbor Pilot (late 1997), COMNAVSEA requested NAS participate in the baseline operational assessment data collection and metric calculations for the first two primary assessment metrics. The resulting NAS report contained baseline year (Fiscal Year 1997) data and metric calculations for the first two metrics in the Test Plan (Capacity Evaluation Report 99-0408, Revised Baseline Costs of Operations and Metrics, May 1999). NAS has verified the values of metrics 1 and 2 for Fiscal Year 1999 (Cost per Unit Output and Production Efficiency and Resource Utilization, NAS Report 2000-0400 of April 1, 2000).

5.4 Department of Defense Inspector General (DoDIG) Review

DoDIG began evaluation of the Pearl Harbor Pilot in March of 1998, however, due to other urgent unresourced audit requirements, they discontinued further work on the pilot in January 1999.

5.5 General Accounting Office (GAO) Evaluation

The General Accounting Office (GAO) was tasked to conduct an independent evaluation of the Pearl Harbor Pilot and provided a report to Congress in September 1999 (GAO/NSIAD-99-199). The GAO team has visited Pearl Harbor on three occasions, beginning in September of 1998. The report states "Where data is available, overall indications are that the pilot has the potential to improve maintenance activities in Hawaii". The principle issues and recommendations centered on the Pilot funding system and command structure (CINCPACFLT as major claimant). These areas are addressed in Appendix A.

6. Pilot Implementation Status

6.1 Single Maintenance Activity

PHNSY and NAVIMFAC were merged into a single maintenance activity. A formal Change of Command ceremony was held on April 30, 1998, where the Commanders of PHNSY and NAVIMFAC were relieved by a single Commander of the new consolidated activity – the Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility (PHNSY&IMF).

6.2 Most Efficient Organization (MEO) Billet Assignment Process

The Pilot Study Report (see section 3.4) contained comprehensive personnel data by category and provided assignment distribution targets, but did not refine to a military and civilian billet-by-billet level of detail. At the time of the activity stand-up in April 1998, there were 2,680 civilians and 44 military assigned to PHNSY, and 543 civilians and 712 military in NAVIMFAC. A MEO billet assignment process was initiated and largely completed by PHNSY&IMF stand-up. One of the attributes of the MEO process was complete integration of civilian and military personnel in all areas, including assigning qualified military personnel to supervisory billets. Union representatives participated in the MEO review and approval process.

Similar to any Intermediate Maintenance Activity, training military personnel is an important mission of the pilot. Military billets were established to ensure military and technical requirements will be met for all assigned military personnel. In addition, it should be noted that most civilian craftsmen have many years of experience and knowledge that are being passed on to the military personnel as they work together. The younger military personnel have gained knowledge, increased their skills and helped energize production.

6.3 Facility Consolidations

Numerous facilities were duplicated in the two separate activities. This expensive redundancy was clearly defined during the pilot planning stage. A program to consolidate individual functions in the better of the two similar facilities commenced upon pilot stand-up. To date, 16 maintenance buildings and associated equipment have been closed. This equates to a reduction of maintenance space of over 300,000 square feet.

6.4 Financial System

A key element of the consolidation was to operate under one financial system – Resource Management System. From activity stand-up in April 1998, until the end of Fiscal Year 1998, PHNSY&IMF operated in a transition mode with both financial systems. Fiscal Year 1999 was the first year of Resource Management System funding.

6.5 Local Board of Directors

The Local Board of Directors (LBOD) was established in November 1998, and has met monthly since. The LBOD consists of Pearl Harbor operational commanders. It was formed to ensure the Pearl Harbor region commanders, both customers and maintenance providers, would be able to cooperatively provide guidance for the execution of ship maintenance in Pearl Harbor. Members provide input/concerns and jointly develop maintenance execution strategies that maximizes resource utilization at PHNSY&IMF and meets operational commitments of Fleet assets within funds available. Various process improvements are evaluated and initiated as appropriate.

The LBOD has been successful in effectively managing Regional Maintenance in Hawaii by establishing better communication, coordinating scheduling and processes between ships/squadrons/Type Commanders and maintenance providers; as well as improving packaging of work for ships. Although Fleet Maintenance Availability (FMA) work priority is established by OPNAV and the Fleet Commander in a general manner, the LBOD has facilitated the production process by prioritizing work and resources in a detailed manner.

6.6 Pilot Board of Directors

Since the inception of the Pearl Harbor Pilot, senior Navy leaders from the Office of the Chief of Naval Operations (OPNAV), COMNAVSEA, CINCPACFLT and Commander in Chief, U. S. Atlantic Fleet (CINCLANTFLT) have provided high level oversight, support and guidance for pilot implementation and operation. To formalize the oversight process and facilitate coordination among these offices and commands, a Pilot Board of Directors was established in February 1999 with designated leaders from OPNAV, NAVSEA, PACFLT and LANTFLT. The Pilot Board of Directors continues to improve the effectiveness of the Pearl Harbor Pilot.

6.7 Workforce and Operational Stability

It was recognized that the merger of PHNSY and NAVIMFAC had the potential to be disruptive for the personnel involved, the production output and the general administration of the activity. Prior to stand-up, the Commanders of PHNSY and NAVIMFAC exerted extraordinary transition foresight, open communication with the workforce and attention to detail. Union leadership was involved in this effort. The merger was executed with a minimum of disturbance and disruption. Emergent problems were addressed and resolved immediately. For example, FMA (Intermediate) effectiveness was lessened for a short time while a new work control process was implemented, but this was quickly corrected and no mission areas were impacted.

7. Pearl Harbor Pilot Assessment

7.1 Assessment Methodology

Pilot assessment was made from two areas of reference – 1) quantitative outputs defined in the Pearl Harbor Pilot Test Plan; and 2) outcomes that are not numerically measurable but demonstrate that the bigger picture goals and objectives of the Navy's Regional Maintenance Plan were achieved.

7.2 Pearl Harbor Pilot Test Plan Results

The following are the nine Pilot Test Plan metric value comparisons between the baseline year and Fiscal Year 1999.

Metric Nr.	TITLE	FY97 (Baseline Year)	Performance Expectations	FY99 (Test Year)	EVALUATION
1	Cost Per Unit Output Ensuring Total Cost Visibility (\$/production man-hour)	\$144.51	\$137.28-\$140.17	\$138.99	Met Expectation
2	Production Efficiency and Resource Utilization	3.15	2.99-3.06	3.03	Met Expectation
3	Maintenance Actions Completed	19,777	19,777	11,501	Inconclusive (see Appendix B)
4	Material Readiness of the Pearl Harbor Based Ships (Number of Open Maintenance Actions)	17,733	15,960	15,791	Inconclusive (see Appendix B)

5	Customer Satisfaction (Schedule Adherence)	11.4% (Late)	Better than 11.4%	8.6% (Late)	Met Expectation
6	Quality	0.76%	No Degradation	1.08%	Maintained Quality (See Appendix B)
7	Schedule Integrity	1.23	Decrease is improvement.	1.16	Improvement
8	New CASREPs	2	Decrease is improvement.	4	Maintained Quality Note 1
9	Earned Value	Statistical Method – No One Number-	Results of analysis	Statistical Method – No One Number	No Degradation in Earned Value Note 2

Note 1: Very small number of CASREPs indicates quality of work remains excellent. See Appendix B.

Note 2: The differences are so small that they are statistically insignificant. Earned value remains unchanged.

For Fiscal Year 1999, the cost metric showed improvement over the baseline year (\$5.52/manhour), and met the performance expectation. If the dollars per manhour improvement are applied to the production work accomplished during Fiscal Year 1999 (2,286,184 manhours), the result is a savings of \$12.6M for the fiscal year. In simplest terms, the cost of basic operation has decreased while the productive output has increased.

Fiscal Year 1997 Cost (adjusted to FY 1999) - \$320.7M

Fiscal Year 1999 Cost - \$317.8M

Fiscal Year 1997 Production Shop mandays delivered - 277,413 mandays

Fiscal Year 1999 Production Shop mandays delivered - 285,773 mandays

The performance efficiency metric also met expectation. The maintenance actions completed and ship material readiness (maintenance item backlog) metrics were inconclusive. The customer satisfaction metric met expectations. The schedule integrity metric indicated improvement. The remaining three metrics indicated that performance was maintained.

The overall evaluation of the nine metrics, with emphasis placed on key assessment metrics 1 and 2, indicates the pilot has met or is on-track to meet program goals. For a detailed discussion of each metric, see Appendix B.

7.3 Pearl Harbor Pilot Positive Outcomes

The pilot consolidation has provided a structure and an organization with the capability of performing the Fleet's priority work in homeport while retaining the smallest possible total workforce. The combined activity has capitalized on the flexibility achieved by a larger workforce and developed processes to support the full spectrum of work. The key objectives of maintaining customer responsiveness and Fleet readiness have been achieved. Examples include FMA schedule adherence improvement and fewer deferred Intermediate level work items.

The pilot consolidation has reduced the maintenance footprint in the Pearl Harbor region. A total of 16 buildings formerly used to perform maintenance have been vacated and returned to the Regional commander for other use or demolition. This equates to a maintenance facility space reduction of 300,000 square feet.

The pilot has allowed flexibility to manage resources to respond to Fleet priorities. With two separate maintenance activities, two separate chains-of-command, two funding systems and a limited ability to cross-flow workers, the ability to respond to changing Fleet priorities was limited. An example is the underutilized labor shop. In the baseline year, PHNSY's underutilized labor shop contained approximately 200 personnel. These workers could not be used on CSMP backlog or other needed Intermediate work because of the constraints inherent in the two funding systems. In Fiscal Year 1999, the underutilized labor shop population was below 10. (This was specifically commented on in the GAO report.) The pilot's consolidated work force and single funding system provided the structure for the Fleet Commander and COMNAVSEA to prioritize work and make optimum use of the entire spectrum of maintenance resources.

The pilot has improved the visibility of the total cost of maintenance in the Pearl Harbor region. The detailed cost tracking system used in the Naval shipyard is now being used to track Intermediate level work which improves cost visibility for this work. The processes established to capture and track all costs have been effective. ADP systems, while difficult at first, have been fine-tuned and are enhancing the efficiency and effectiveness of all of the work. Positive technical control of the work and maintenance processes has been preserved and is enhancing the standardization of all work.

In addition, the pilot has provided an improved mechanism for real-time "customer" input and involvement covering all organic ship maintenance in Hawaii. The Local Board of Directors (LBOD) is a highly effective means for establishing priorities, identifying problem areas, and working solutions with the Fleet owners/customers since they are principal members of the LBOD. This interaction has created a positive synergy and team effort toward the goal of improving ship maintenance.

A Customer Relations Committee was established to collect written customer satisfaction feedback. Since pilot stand-up, customer feedback indicates minimal complaints relative to the total feedback received. The data for Fiscal Year 1999 shows that 84% of the feedback was positive. Positive examples include:

USS CHEYENNE – *"FMB Pearl Harbor demonstrated great professionalism and flexibility. In addition to completing scheduled work, IMF was there to support when emergent ship's needs arose."*

USS RUSSELL – *"The Pearl Harbor Pilot Program works. Manpower loading problems, caused by two other concurrently planned CNO availabilities, were identified early and avoided largely due to the flexibility created by the PHNSY-IMF merger."*

USS SAN FRANCISCO – *"The timely completion of scheduled work allowed SAN FRANCISCO to put to sea and meet her operational commitments."*

USS TOPEKA – *"The impressive dedication, quality of work and around the clock support was directly responsible for TOPEKA's superior material readiness, rapid weapons load and on time deployment."*

USS LOS ANGELES – *"In just two weeks, PHNSY&IMF have performed a significant amount of work comparable to a normal upkeep to make LOS ANGELES 100 percent ready for WestPac."*

USS HOPPER – *"The PHNSY-IMF-Hopper team expertly managed a work package that grew an authorized one percent of new PHNSY work."*

USS DAVID R. RAY – *"DAVID R. RAY's port visit to Pearl Harbor was excellent. It was the kind of productive visit needed to help put the ship back into the maintenance"*

frame of mind. The maintenance community went out of its way to support the ship and to provide the highest standards of service."

DIRECTOR, NAVAL NUCLEAR PROPULSION - "-----The BOSTON defueling was completed with no major quality problems, and, despite this being only the shipyard's third S6G reactor servicing availability, cost and schedule performance were among the best of the LOS ANGELES class defuelings performed in the program to date. Well done!"

A prime driver in a customer's perception of PHNSY&IMF's performance is obviously the quantity and quality of the product. Customer feedback is an indicator that product quantity (Metric #3) and quality (Metric #6) are satisfactory and have not been degraded.

7.4 Areas Needing Improvement

As discussed in paragraph 6.7 of this report, short-term problems that occurred during start-up of the pilot were quickly addressed and solved.

Two areas which continue to need improvement through longer term solutions are 1) timely allocation of resources to projects and 2) performance on lengthy, complex submarine availabilities.

The Resource Management System financial process provides the pilot flexibility to move resources across projects without accounting restrictions. Since its inception, the pilot has employed a Resource Allocation Process (RAP) to allocate personnel resources. Although the basic concept of the RAP is sound, timely execution continues to plague the process. Effective assignment of people and resources to projects in response to work priority changes is less than optimum. Work priority changes stem from the fact that 25% of the pilot's workload involves short term or emergent repairs to operational surface ships and submarines. These repair requirements are extremely dynamic and constitute the highest priority work for the pilot. PHNSY&IMF, NAVSEA and CINCPACFLT are working to improve this important process.

The second area needing improvement is cost and schedule performance on long term submarine availabilities, specifically Depot Maintenance Periods (DMPs). DMPs are notionally scheduled for 13 months duration and 140,000-145,000 mandays. The pilot, as did its predecessor for this type of work (Pearl Harbor Naval Shipyard), continues to exceed the notional DMP durations. The pilot did not change management or revise production procedures on these projects. NAVSEA and CINCPACFLT are working with PHNSY&IMF to improve performance on complex DMPs through process improvement, better resource allocation, resource sharing with other Naval Shipyards and quality management initiatives. These actions are showing results. The current DMP closest to completion, USS KEY WEST, is showing improvement over the most recently completed DMP, USS CHICAGO.

8. Pearl Harbor Pilot Lessons Learned

8.1 Overview

The Pearl Harbor Pilot is a major undertaking and represents a major change at the local and national levels. The new activity, PHNSY&IMF, is undertaking a broader scope of work than the two previous activities and is challenged daily to manage the maintenance resources across the

full spectrum of I and D level work with the priorities shifting frequently to support the Fleet's operational commitments. The management and budget process now involves two parent commands with CINCPACFLT as the budget major claimant and COMNAVSEA as the operating agent and technical authority. The pilot has been successfully operating for almost two years and has generated many lessons learned for the Navy. These lessons learned will be invaluable to support Phase 2 of the Navy's Regional Maintenance Plan.

8.2 Lessons Learned

Some of the more noteworthy lessons learned include:

- Co-location of FMA Project Personnel with Customers and Stakeholders

For the short, intense FMAs, previously accomplished by the NAVIMFAC, all parties associated with FMA work were collocated; PHNSY&IMF project personnel, customer maintenance personnel, ship representatives and anyone else associated with the work. This close proximity created a positive synergy and reduced lead time for coordination between activities and ship's force, work definition and work assignment lead times.

- Military personnel integration

Two major problems were experienced in properly integrating military personnel into the consolidated maintenance organization. These were 1) delays in placing senior, qualified sailors in supervisory positions and 2) providing for an unbroken military chain of command in the Project Management operational organization. Placing senior military personnel, particularly Chief Petty Officers, in supervisory positions has been a slow process that should have been more aggressively managed. In addition, the mechanism for maintaining a clear military chain of command for a sailor assigned to a production Project from the Resource Department (Project Management modus operandi) was not clear. The sailor had an established chain of command in the Resource Department that sometimes disappeared when assigned to a Project. Both of these problems were recognized and are being resolved.

- Automated Information Systems (AIS)

There were a myriad of lessons learned in the AIS area, which were expected. Construction of an analytical model to identify all potential problems during the pilot transition and startup was not realistically feasible, and a conscious decision was made to learn through experience. Examples include inputting of military personnel labor hours in the Project Management Database and the interfacing of the Management Information data into the Navy's central Resource Management System database. None of the problems were serious, and a wealth of information for use in other regional maintenance consolidations was generated. Although these problems generated concern in Budget and Information System offices inside and outside of the activity, they were transparent to those performing the maintenance and had no impact on the production output. In spite of the many problems, it should be noted that end-of-year reconciliations were successfully completed at the end of the first full year of Resource Management System funding.

- Tailoring of the Maintenance Processes

One of the elements in the Concept of Operations was use of standard work documents, however, it became apparent that a degree of flexibility had to be built in for level of detail in procedures, planning and tracking processes. It was necessary to provide the ability to adjust and fine tune maintenance processes, based on the complexity of the particular work being performed.

- Resource Allocation

Under Project Management, each major project, including the submarine and surface ship FMAs, is assigned a small core of production workers. The remainder of production workers is assigned to the Resource Department and constitutes a pool of skilled labor. As a project work profile

changes, the RAP augments the project core with personnel of the required trade skills or decreases the manning level. Integration of military and civilian personnel was facilitated by placing all production military personnel, without distinction, in the RAP.

9. Conclusion

PHNSY&IMF has begun to streamline and standardize the ship maintenance process and operations in the Pearl Harbor region.

The transition was made with a minimum of personnel, production output and operational disruption. PHNSY&IMF is operating in a stable and effective mode.

The measured metric output results are clear. Where data was available, improvement over the baseline was seen. The subjective outcome assessment can be summed up in the statement from CINCPACFLT: "The pilot has significantly improved the ability and flexibility to efficiently manage the total maintenance resources available to respond to changing workloads and priorities".

Numerous problems and challenges were experienced in the consolidation process; however, none were insurmountable. Solutions are in place or underway, and many lessons learned have been developed.

The Pearl Harbor Pilot is demonstrating that this single activity is successfully accomplishing ship maintenance while maintaining customer responsiveness and Fleet readiness. The concept is considered to be a viable and effective element of the Navy's Regional Maintenance Plan.

APPENDIX A

GAO REPORT RECOMMENDATIONS

The GAO Report on the Pearl Harbor Pilot contained the following recommendations.

“As the Navy proceeds with other similar consolidations, we recommend that the Secretary of Defense require the Secretary of the Navy to resolve issues related to the appropriate mechanism to finance and manage these types of activities. Specific financial questions that need to be resolved include the impact of using the direct appropriations to finance the pilot and other potential regionalization actions with regard to (1) the Navy shipyards and activities remaining in the working capital fund, (2) ship maintenance activities during periods without appropriations, (3) cost visibility of ship maintenance activities, (4) incentives inherent under NWCF’s buyer/seller relationship for improving productivity and performance, and (5) the capital investment program for ship maintenance activities. In addition, other questions that need to be resolved include determining whether the pilot’s command structure under the Fleet’s ownership has helped streamline the ship maintenance process and improve operations in Hawaii.”

Accounting (Funding) System.

The accounting (financial) system used by PHNSY was the Navy Working Capital Fund (NWCF) while NAVIMFAC was funded by yearly authorization (Resource Management System funding). A major guiding principle of the pilot was the ability to gain increased flexibility through free-flow of the integrated military and civilian workforce to all required work, without restrictions imposed by accounting system regulatory requirements. A team of Navy financial experts, lead by a Navy Flag Officer, reviewed all accounting system options and concluded that Resource Management System funding provided the most flexibility for the pilot while maintaining total and detailed cost visibility. Three other separate panels of Navy financial experts reached the same conclusion (Maintenance Support Quality Management Board Financial Working Group in 1995, CNO NWCF Study Group in 1998, and Fleet/COMNAVSEA Financial Review Group in 1999). Considerations leading to the conclusion included:

- Resource Management System funding would best facilitate complete integration of civilian and military personnel in the workforce and provide the flexibility to free-flow personnel to any part of the workload.
- The productivity and performance improvement potential of a consolidated and Resource Management System funded activity, with complete workforce flexibility, is significantly greater than the improvement bias provided by the NWCF’s buyer/seller relationship between the maintenance activity and the customer.
- Comprehensive and total cost visibility would be achieved by continuing to use the PHNSY accounting system for the consolidated activity, interfaced to the Navy’s centralized appropriated funding information system. The cost visibility would be the same as NWCF activities.
- During periods without appropriations, the flexibility provided by the NWCF corpus for NWCF funded activities to continue maintenance operation would extend only a

few weeks. This limited NWCF flexibility was considered a minor factor compared to the overall benefits of Resource Management System funding for the pilot.

- Under NWCF, facility capital improvements are planned and budgeted as part of the customer's cost for performing work. In Resource Management System funding, capital improvements are part of the appropriated funding budget and compete with other requirements. It was concluded that this important area in the pilot would continue to receive the necessary priority and attention with COMNAVSEA as the operating agent of the Pilot; i.e. developing requirements, formulating the budget and acting as the capital improvements advocate.
- Removal of PHNSY from the NWCF would have minimal impact on the viability of the fund. During Fiscal Year 1998, all Naval Shipyards contributed only 10.6 percent of the funds total revenues, with PHNSY accounting for 1.7 percent of the total. In theory, each NWCF activity (or activity group) is a "stand-alone" to the NWCF as a whole; it collects sufficient revenue to cover its own costs.

A Navy decision was made to use the appropriated fund accounting system (Resource Management System funding) for the new maintenance activity, beginning in Fiscal Year 1999.

Fleet Ownership.

CINCPACFLT was claimant for the NAVIMFAC and COMNAVSEA for PHNSY. To best facilitate achieving the operational principles and structure for the new activity, CINCPACFLT was designated as the major claimant, with COMNAVSEA as the operating agent and technical authority.

With two separate maintenance activities, two separate chains-of-command, two funding systems and a limited ability to cross-flow workers, the ability to respond to changing Fleet priorities was limited. The command structure of the pilot has allowed flexibility to manage resources to respond to Fleet priorities.

Summary. The end result of the financial system and command structure chosen for the pilot can best be summed up in the statement from CINCPACFLT; "The pilot has significantly improved the ability and flexibility to efficiently manage the total maintenance resources available to respond to changing workloads and priorities".

APPENDIX B

DETAILED DISCUSSION OF PEARL HARBOR PILOT TEST PLAN METRICS

These metrics compare Fiscal Year 1997 Pearl Harbor Naval Shipyard and IMF Pearl Harbor performance to Pearl Harbor Pilot performance in Fiscal Year 1999.

Metric 1: Cost per Unit Output Ensuring Total Cost Visibility

Total cost of a Production Shop Direct Manhour of work delivered. Objective is to provide total cost visibility of a Production Shop direct manhour.

The data collection and calculations for Fiscal Year 1997 were conducted by Naval Audit Service (NAS) and published in the Capacity Evaluation Report discussed in section 5.3 of this report.

In the baseline year (Fiscal Year 1997), the metric result was \$135.36; the cost to deliver one production hour a maintenance craftsman works. The metric was calculated by combining the total cost (overhead, production support, production) of both PHNSY and NAVIMFAC, then dividing by the total Production Direct Manhours of both activities. Any reduction in this metric would indicate the total cost has been reduced and/or the Production Shop Direct manhours delivered has increased. Performance expectation for this metric is to reduce cost of a Production Shop Direct manhour by three to five percent.

When the Fiscal Year 1997 baseline cost was accelerated for Fiscal Year 1999, to account for inflation and pay raises, the baseline cost for comparison purposes rose to \$144.51. Based on the performance expectation to reduce three to five percent of the baseline cost, the target range for Fiscal Year 1999 is \$137.28 to \$140.17.

In Fiscal Year 1999, the cost of a Production Shop Direct Manhour for PHNSY&IMF was \$138.99. The metric has shown improvement over the baseline year (\$5.52/manhour), and has successfully met the performance expectation.

Metric 2: Production Efficiency and Resource Utilization

Total activity labor hours expended to deliver a Production Shop Direct labor hour. Objective is to assess effectiveness of personnel resource distribution and utilization.

The data collection and calculations for Fiscal Year 1997 were conducted by Naval Audit Service (NAS) and published in the Capacity Evaluation Report.

In the baseline year (Fiscal Year 1997), the metric result was 3.15 total activity hours to produce one Production Shop Direct labor hour. The metric was calculated by combining the total activity labor hours (overhead, production support, production) of both PHNSY and NAVIMFAC, then dividing by the total Production Direct manhours of both activities. Any reduction in this metric would indicate the total activity labor hours (in the overhead and production support areas) have been reduced and/or the Production Shop Direct manhours delivered has increased. Performance expectation for this metric is to reduce total activity hours required to deliver a Production Shop Direct manhour by three to five percent.

Based on the performance expectation to reduce three to five percent of baseline, the target is 2.99 to 3.06.

In Fiscal Year 1999, the total activity labor hours required to deliver a Production Shop Direct Manhour for PHNSY&IMF were 3.03. The pilot has been successful in meeting improvement expectation for this metric.

Metric 3: Maintenance Actions Completed

Total Current Ship's Maintenance Program (CSMP) work item throughput. Objective is to determine the total CSMP work items completed.

The CSMP is an inventory of all maintenance work items required by Navy ships. These CSMP items range from simple jobs, such as replacing a label plate, to complex jobs like replacing a nuclear plant valve. Type Commanders and Squadrons review the CSMP and determine which jobs will be inducted into which maintenance activity. Once the maintenance activity accepts the CSMP job, the work item is executed and the maintenance action is removed from the CSMP. Prior to the Pilot, most CSMP jobs were inducted into the NAVIMFAC to be accomplished during short duration, Intermediate level Fleet Maintenance Availabilities (FMAV). Fewer, more complex jobs, were inducted into PHNSY to be accomplished during long term, Depot level CNO Availabilities.

In the baseline year (Fiscal Year 1997), a total of 19,777 CSMP work items were completed by NAVIMFAC and PHNSY. Performance expectation is to maintain at least the same completion rate as in Fiscal Year 1997. In Fiscal Year 1999, 11,501 total CSMP work items were completed by PHNSY&IMF (decrease of 42%). The metric result appears to indicate the pilot organization has not been performing to target expectations. However, during Fiscal Year 1997, the military enlisted population at the NAVIMFAC was significantly higher than in Fiscal Year 1999. The average total military enlisted personnel assigned to the NAVIMFAC during Fiscal Year 1997 was 1,116. The average on-board military personnel during Fiscal Year 1999 dropped to 685 (decrease of 38%). The reduction in military was due to sea-shore rotation requirements plus another Regional Maintenance initiative to partially civilianize the NAVIMFAC, which predated the Pearl Harbor Pilot. The civilian increase occurred during a short period of time in Fiscal Year 1996, while the military draw down was a gradual process that extended through the end of Fiscal Year 1998. With the large number of excess NAVIMFAC workers available in Fiscal Year 1997, the expectation that the CSMP work items completed would remain at the same level was unrealistic.

Ship Commanding Officers designate the priority of CSMP work items. Since PHNSY&IMF was overloaded during Fiscal Year 1999, some lower priority CSMP work items were not accomplished, thereby impacting this metric. However, the Local Board of Directors, which included the operational commanders of the ships (as discussed in section 6.5 of this report), ensured the most important, operationally critical work was accomplished. In addition, customer relations is a subjective gage of the adequacy of the quantity of work performed (see section 7.3).

Metric 4: Material Readiness of the Pearl Harbor Based Ships

Total CSMP work item backlog. Objective is to monitor change in the material readiness of Pearl Harbor based surface ships and submarines.

As stated in the previous section, the CSMP is an inventory of all maintenance items required by ships homeported in Pearl Harbor. The total number of work items in the CSMP inventory, or

backlog, for a particular ship is one indicator of material readiness. It must be recognized that the CSMP is not a stand-alone measurement of material readiness, as there are many other factors that affect the quantity of the backlog, including:

- Increases due to material inspections,
- Decreases due to removal of completed/out-of-date items identified during validation audits, and
- Increases due to preparation for major industrial availabilities or overseas deployments.

In baseline year (Fiscal Year 1997), the CSMP work item backlog was 17,733 (end-of-year figure). Based on the performance expectation to reduce the CSMP backlog by 10% of baseline, the target for the total Fiscal Year 1999 CSMP backlog was set at 15,960 work items. This expectation was subsequently found to be invalid. It was not known at the time that the Pearl Harbor ship population would drop from 40 ships in Fiscal Year 1997 (17 surface ships and 23 submarines) to 33 ships in Fiscal Year 1999 (12 surface ships and 21 submarines), thereby invalidating the concept of total CSMP backlog.

The average monthly CSMP backlog per submarines remained approximately the same in Fiscal Year 1999 as in Fiscal Year 1997 (390 to 440 items). The backlog per surface ship increased steadily during Fiscal Year 1999 (419 to 694 items).

As reported in the discussion on Metric #3 (Maintenance Actions Completed), PHNSY&IMF was overloaded and prioritization of work requirements was necessary. It is believed that this process contributed significantly to the increase in surface ship backlog. PHNSY&IMF, NAVSEA and CINCPACFLT are working to reverse this trend.

This metric is considered inconclusive.

Metric 5: Customer Satisfaction

Availability Schedule Adherence. Objective is to measure degree of adherence to CNO scheduled availability completion dates.

There are many aspects of the pilot that can be measured to evaluate customer satisfaction, and an important one is CNO Availability Schedule Adherence, i.e. completing ship availabilities on time.

For every day a ship maintenance availability is late in completing, the ship is unavailable for operational commitments. The better the pilot is at completing availabilities on time or early, the more satisfied the customer.

The metric is calculated by adding all the days CNO scheduled ship availabilities completed late and subtracting all the days availabilities completed early, then dividing by the total originally scheduled days of all availabilities. This yields the percentage of the total CNO scheduled ship days in availability that were early or late.

In the baseline year (Fiscal Year 1997), PHNSY was 11.4% late in completing CNO availabilities. Performance expectation is to improve schedule adherence.

In Fiscal Year 1999, PHNSY&IMF completed seven CNO availabilities and was 1.3% early overall for these availabilities. There is one other CNO availability that was scheduled to complete in Fiscal Year 1999, but whose completion slipped to February 15, 2000; USS CHICAGO (SSN 721) Depot Maintenance Period (DMP). CHICAGO DMP is somewhat of an

anomaly in that the baseline year did not include a SSN DMP. PHNSY's historical performance on DMPs was not at the level of the larger shipyards with greater capacity, and CHICAGO is not an exception. The metric definition states that the schedule deviation will be lodged in the calculation for the Fiscal Year that the availability completes. Therefore, the CHICAGO schedule delay should appear in the Fiscal Year 2000 metric vice in Fiscal Year 1999. If the delay incurred in Fiscal Year 1999 was included in the Fiscal Year 1999 metric, the value would be 8.6% late. In the interest of complete disclosure, the metric value of 8.6% late rather than 1.3% early is used in this report.

The metric met expectation, even when considering CHICAGO DMP.

Metric 6: Quality

Activity Depot Work Quality. Objective is to determine an activity depot work quality index by analysis of warranty work and the total size of the depot work completed.

The work quality index is calculated by dividing the manhours of warranty work following the ship availability by the total work performed during the fiscal year.

In the baseline year (Fiscal Year 1997), the depot work quality index was 0.76%. Performance expectation is no degradation (increase) of the index value.

For Fiscal Year 1999, a quality index value of 1.08% was calculated. This was an increase over the baseline year of three manhours of rework per 1,000 manhours of total work. This is statistically insignificant. The quality of the productive output was maintained.

It should be noted that customer relations (see section 7.3) are also a strong subjective measure of work quality.

Metric 7: Schedule Integrity

Activity Schedule Integrity. Objective is to determine an activity work schedule integrity index by analysis of the budgeted allowance of work scheduled and actual amount of work performed.

In the baseline year (Fiscal Year 1997), the index was 1.23. A decrease in the index indicates improvement.

The index was calculated to be 1.16 for Fiscal Year 1999, indicating improvement.

Metric 8: New Casualty Reports [CASREPS]

CASREPS attributed to activity work during availabilities. Objective is to determine post availability equipment failures resulting from activity work performed during an availability.

In the baseline year (Fiscal Year 1997), the number of CASREPs was 2. In Fiscal Year 1999, the number was 4. The activity repairs hundreds of pieces of equipment each year. Anyone of them would be the subject of a CASREP if it failed as a result of faulty work by the activity. An increase in the number should indicate degradation, however, the number of CASREPs related to activity work is so small that the samples are considered statistically insignificant. Whether 2 or 4 CASREPs, it is clear that there is no problem with equipment failures resulting from PHNSY&IMF work.

Metric 9: Earned Value

Analysis of selected similar work items using a statistical technique.

The objective is to perform an analysis of selected similar work items using a statistical technique. "Cost-drivers" were selected for analysis to represent the entire ship availability. A "Cost Driver" is defined as a body of work that represents a major or controlling package of work accomplished on a particular ship during an availability.

In terms of "earned value", the metric definition assumes that if the Fiscal Year 1999 manday expenditure for a cost driver is less than the baseline year earned value (and all other factors are equal), the productivity of work performed has improved. Conversely, if the comparison is greater, then there is a reduction in productivity.

The analysis of this metric has been separated by ship type because the findings are different for submarines and surface ships.

In Fiscal Year 1999, PHNSY&IMF expended more man-days in four submarine cost drivers and less man-days in one submarine cost driver, compared to the baseline year. There was not a significant change in the overall performance of the cost drivers when considering the extremely small absolute value of the median changes, in all but one case, less than one man-day. Also the changes were in both the positive and negative direction. There is no degradation in earned value for submarines.

For surface ship availabilities, statistical analysis of this data concludes that the shipyard expended more man-days to complete similar work on one cost driver in Fiscal Year 1999 than in the baseline year and less man-days on two cost drivers. Analysis of the data found that the data sets are too small to make the assumption that the same work is being compared between fiscal years. Furthermore, a manual review of the specific data failed to conclude the work was similar, especially for the higher man-day work items. There is no valid indication of any degradation in earned value for surface ships.

ADDENDUM

FISCAL YEAR 2000 METRIC VALUES

REPORT TO CONGRESS

PEARL HARBOR REGIONAL MAINTENANCE PILOT

Prepared by:

Department of the Navy
Commander in Chief, United States Pacific Fleet
250 Makalapa Drive
Pearl Harbor, HI 96860-3131

May 2001

1. Fiscal Year 2000 Metric Values

Although the Pearl Harbor Pilot Test Plan designated Fiscal Year 1997 as the baseline year and Fiscal Year 1999 as the test comparison year, the primary metrics are continuing to be used as assessment tools. The Naval Audit Service calculated and verified the metric values for Fiscal Year 1997 and Fiscal Year 1999. Their involvement in the pilot evaluation ended after Fiscal Year 1999. The Fiscal Year 2000 metric values were calculated by PHNSY&IMF, and reviewed by NAVSEA.

The primary metric values for Fiscal Year 2000 are as follows (Metric #1 values are in FY 2000 constant dollars):

Metric Nr.	TITLE	FY 1997 (Baseline Year)	FY 1999 (Test Year)	FY 2000	EVALUATION
1	Cost Per Unit Output Ensuring Total Cost Visibility (\$/production man-hour)	\$149.60	\$143.82	\$136.07	Continued to Improve (9% from FY 97)
2	Production Efficiency and Resource Utilization	3.15	3.03	2.99	Continued to Improve
3	Maintenance Actions Completed	19,777	11,501	8,985	See Discussion Below
4	Material Readiness of the Pearl Harbor Based Ships (Number of Open Maintenance Actions)	17,733	15,791	15,218	See Discussion Below
5	Customer Satisfaction (Schedule Adherence)	11.4% (Late)	8.6% (Late)	18.6% (Late)	See Discussion Below
6	Quality	0.76%	1.08%	NA	See Discussion Below
7	Schedule Integrity	1.23	1.16	NA	See Discussion Below
8	New Casualty Reports (CASREP)	2	4	NA	See Discussion Below
9	Earned Value	Statistical Method – No One Number-	Statistical Method – No One Number	NA	See Discussion Below

The two most significant metrics (#1- cost per unit output and #2 – resource utilization) continue to show improvement in Fiscal Year 2000. These show that the pilot has exceeded expectations.

Metrics #3 and #4 (CSMP throughput and CSMP backlog) remain inconclusive. This is discussed in some detail in Appendix B of the report. These metrics will continue to be tracked as assessment tools, but not as a comparison to the baseline year.

Metric #5 (schedule adherence) degraded significantly due to the lengthy completion extension of the USS CHICAGO Depot Maintenance Period availability. As stated in the report, CHICAGO

DMP is an anomaly in that the baseline year and Fiscal Year 1999 did not include a SSN DMP completion. CINCPACFLT, NAVSEA and PHNSY&IMF are working together to improve performance on complex DMPs through process improvement, better resource allocation, resource sharing with other Naval Shipyards and quality management initiatives. These actions are clearly showing results. PHNSY & IMF completed its first DMP, USS KEY WEST, since CHICAGO in 17 months (a four month improvement) and is showing further improvement on its current DMP, USS PASADENA.

The remaining four metrics are no longer being tracked after the test year, Fiscal Year 1999. A new improved metric is under development for quality. The others are considered redundant and inconclusive as it has been shown that the pilot process did not cause degradation in any of the areas being reviewed.